U.S. NUCLEAR REGULATORY COMMISSION

STANDARD REVIEW PLAN

OFFICE OF NUCLEAR REACTOR REGULATION

10.4.3 TURBINE GLAND SEALING SYSTEM

REVIEW RESPONSIBILITIES

Primary - Effluent Treatment Systems Branch (ETSB)

Secondary - None

I. AREAS OF REVIEW

At the construction permit (CP) stage of review, ETSB reviews the information in the applicant's safety analysis report (SAR) in the specific areas that follow. At the operating license (OL) stage of review, the ETSB review consists of confirming the design accepted at the CP stage.

The turbine gland sealing system design, design objectives, method of operation, and factors that influence gaseous radioactive material handling, e.g., source of sealing steam, system interfaces, and potential leakage paths are reviewed. The ETSB review includes piping and instrumentation diagrams (P&IDs).

Provisions for controlling the release of radioactive materials from the gland seal condenser vent are reviewed in SRP Section 11.3 by ETSB.

In addition, the ETSB will coordinate evaluations of other branches that interface with the overall review as follows:

> Mechanical Engineering Branch (MEB) reviews systems quality group classifications as part of its primary review responsibility for SRP Section 3.2.2. Quality Assurance Branch (QAB) reviews systems quality assurance programs as part of its primary review responsibility for SRP Sections 17.1 and 17.2. The Auxiliary Systems Branch (ASB) reviews the potential effect of high energy pipe breaks within this system on safety-related equipment as part of its primary review responsibility for SRP Section 3.6.1.

For those areas of review identified above as being reviewed as part of the primary review responsibility of other branches, the acceptance criteria necessary for the review and their methods of application are contained in the referenced SRP section of the corresponding primary branch.

II. ACCEPTANCE CRITERIA

ETSB will accept the Turbine Gland Sealing System design if the following Commission regulations are met:

1. General Design Criterion 60 as it relates to the turbine gland sealing system design for the control of releases of radioactive materials to the environment.

2. General Design Criterion 64 as it relates to the turbine gland sealing system design for the monitoring of releases of radioactive materials to the environment.

The requirement of the Commission regulations identified above are met by using regulatory positions contained in the following regulatory guides:

1. Regulatory Guide 1.26 as it relates to the quality group classification for the turbine gland sealing system that may contain radioactive materials, but are not part of the reactor coolant pressure boundary and are not important to safety.

2. Regulatory Guides 1.33 and 1.123 as they relate to the quality assurance programs for the turbine gland sealing system components that may contain radioactive materials.

Specific criteria necessary to meet the relevant requirements of 10 CFR Part 50, Appendix A, General Design Criteria 60 and 64 are as follows:

The turbine gland sealing system should be designed to provide for the collection and condensation of sealing steam and the venting and treatment (as required in Ref. 1) of noncondensables. Quality Group D as defined in Regulatory Guide 1.26 (Ref. 2) and a nonseismic design classification are acceptable design criteria for this system.

III. REVIEW PROCEDURES

The ETSB reviewer selects and emphasizes material from this SRP section, as may be appropriate for a particular case.

1. ETSB reviews the equipment quality group classification to meet the guidelines of Regulatory Guide 1.26 (Ref. 2). Exceptions are transmitted to MEB, which has primary responsibility under SRP Section 3.2.2.

2. ETSB reviews the system P&IDs to determine the source of sealing steam and the disposition of steam and noncondensables vented from the gland seal. The review includes the radiological processing and monitoring provisions in accordance with SRP Sections 11.3 and 11.5.

3. ETSB reviews the quality assurance for the design, construction, and operational phases for the turbine gland sealing system according to the guidelines of Regulatory Guides 1.33 and 1.123 (Refs. 3 and 4). Exceptions are transmitted to QAB which has primary responsibility under SRP Sections 17.1 and 17.2.

IV. EVALUATION FINDINGS

ETSB verifies that sufficient information has been provided and that the review is adequate to support conclusions of the following type, to be included in the staff's safety evaluation report:

> The turbine gland sealing system includes the equipment and instruments to provide a source of sealing steam to the annulus space where the turbine and large steam valve shafts penetrate their casings. The scope of our review included the source of sealing steam and the provisions incorporated to monitor and control releases of radioactive material in effluents.
>
> The staff concludes that the turbine gland sealing system design is acceptable in that the applicant has met the requirements of General Design Criteria 60 and 64 with respect to the control and monitoring of releases of radioactive materials to the environment by providing a controlled and monitored turbine gland sealing system.

V. IMPLEMENTATION

The following is intended to provide guidance to applicants and licensees regarding the NRC staff's plans for using this SRP section.

Except in those cases in which the applicant proposes an acceptable alternative method for complying with specified portions of the Commission's regulations, the method described herein will be used by the staff in its evaluation of conformance with Commission regulations.

Implementation schedules for conformance to parts of the method discussed herein are contained in the referenced regulatory guides.

VI. REFERENCES

1. 10 CFR Part 50, Appendix A, General Design Criterion 60, "Control of Releases of Radioactive Materials to the Environment," and General Design Criterion 64, "Monitoring Radioactivity Releases."

2. Regulatory Guide 1.26, "Quality Group Classifications and Standards for Water-, Steam-, and Radioactive-Waste-Containing Components of Nuclear Power Plants."

3. Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)."

4. Regulatory Guide 1.123, "Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants."